

DESCRIPTION OF THE THIRD-STAGE LARVA  
OF *MEGASOMA ELEPHAS OCCIDENTALIS* BOLIVAR Y  
PIELTAIN *ET AL.* (SCARABAEIDAE: DYNASTINAE)

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ABSTRACT

The third-stage larva of *Megasoma elephas occidentalis* Bolívar y Pieltain *et al.* is described and illustrated, based on 3 specimens collected near Tecomán, Colima, Mexico. Morphological characteristics are compared with those of the genera *Dynastes* and *Strategus*.

Larvae of American Dynastini are poorly known; only the larvae of *Dynastes tityus* (L.) and *D. granti* Horn have previously been described (Ritcher 1966). Little is known about their biology; they are found in great rotten logs or in deposits of vegetal debris accumulated in the hollows of trees (Glaser 1976).

Technical terms used in this paper are those proposed by Ritcher (1944, 1966).

Dynastine larvae are distinguished from other scarabaeid larvae by the following combination of characters: Mandibles each with a ventral, oval stridulating structure, consisting of transverse granular ridges; maxillary stridulating teeth truncate; lacinia of each maxilla with 3 unci more or less fused at their bases; haptomerum of epipharynx with a raised bilobated or entire ridge or a tooth-like process; distinct zygum and prominent heli absent; epipharynx with both nesia well-developed; both plegmata and proplegmata absent; ocelli usually present; raster usually with no palidia; anal slit transverse and curved (Ritcher 1966: 131). The differential larval characteristics of genera of Dynastini have not been defined; Ritcher (*loc. cit.*) included the North American species in a general key.

This paper includes a description of the third-stage larva of *Megasoma elephas occidentalis* Bolívar y Pieltain *et al.* 1963, and comparison with larvae of *Dynastes* and *Strategus*.

DESCRIPTION

The following description is based on 3 third-stage larvae of *M. e. occidentalis* collected in association with an adult female in MEXICO: State of Colima, Tecomán Municipality, El Saucito, 28-VIII-70, Y. Domínguez & R. Peña, in rotten log of *Cocos nucifera* L., 200 m.

*Head.* Maximum width of head capsule: 16 mm. Surface of cranium strongly and densely punctate, dark brown to black. Frons on each side bearing 2 posterior frontal setae, 3 median lateral frontal setae, 4 anterior frontal setae, and numerous anterior frontal angular setae of which one is distinctly thicker and longer; the remaining cranial surface bears numerous short, fine, uniformly distributed setae and among them the more conspicuous 2 dorsoepicranial setae and 4 epicranial setae, all placed well away from epicranial suture. Clypeus bearing 4 long setae on preclypeus and numerous short, fine, scattered setae. Labrum subtrapezoidal, with 5 or 6 posterior setae, 2 central setae, 4 lateral setae, and numerous short, fine, scattered setae. Ocelli vestigial (fig. 2-A). Epipharynx (fig. 1-A) with fused zygum and epizygum forming an oblique, sclerotized tubercle; heli absent; right chaetoparia with 52-55 spinelike setae and 56 fine setae; left chaetoparia with 86-90 spinelike setae and few fine setae; right acroparia with 15-17 straight, long, gross setae; left acroparia with 18-20 long, straight, lightly curved, gross setae; acanthoparia with 9 short, curved, spinelike setae. Scissorial area of right mandible with 3 teeth, well-separated by 2 notches; molar area with 3 lobes. Scissorial area of left mandible with 3 well-marked teeth and 1 truncate preincisor tooth; molar area with 2 lobes and a long, truncate acia. Stridulatory area of each mandible well-marked by gross striae (figs. 3-A and B). Galea with conical uncus well-developed; lacinia with 3 conical unci fused at their bases; maxillary stridulatory area with 8 little, subtrapezoidal, truncated teeth and wide, truncate anterior tubercle (fig. 1-B). Labium cylindric in form (fig. 2-B), with numerous long, strong setae located principally at sides; hypopharynx with right anterior lateral process of hypopharyngeal sclerome strongly developed, raised and curved, heavily sclerotized; left hypopharyngeal lateral lobe with an oblique row of 7 posterior lateral setae. Dorsal surface of last antennal segment with 8 sensory spots (fig. 2-C).

*Thorax.* Pronotum with wide lateral areas, well sclerotized, of reddish color. Mesoprescutum with 1 anterior row of separated short setae and 4 rows of posterior large setae; mesoscutum with 3 lateral rows of long setae; mesoscutellum with 2 rows of long setae; metaprescutum with anterior irregular row of short setae and 3 posterior rows of long setae; metascutum with 4 lateral rows of long setae; metascutellum with 3 rows of long setae. Thoracic spiracles 2.06 mm long and 1.93 mm wide (fig. 3-C). Respiratory plate with indefinite number of irregular-shaped "holes". Lobes of respiratory plate contiguous. Spiracular bulla convex, longitudinal.

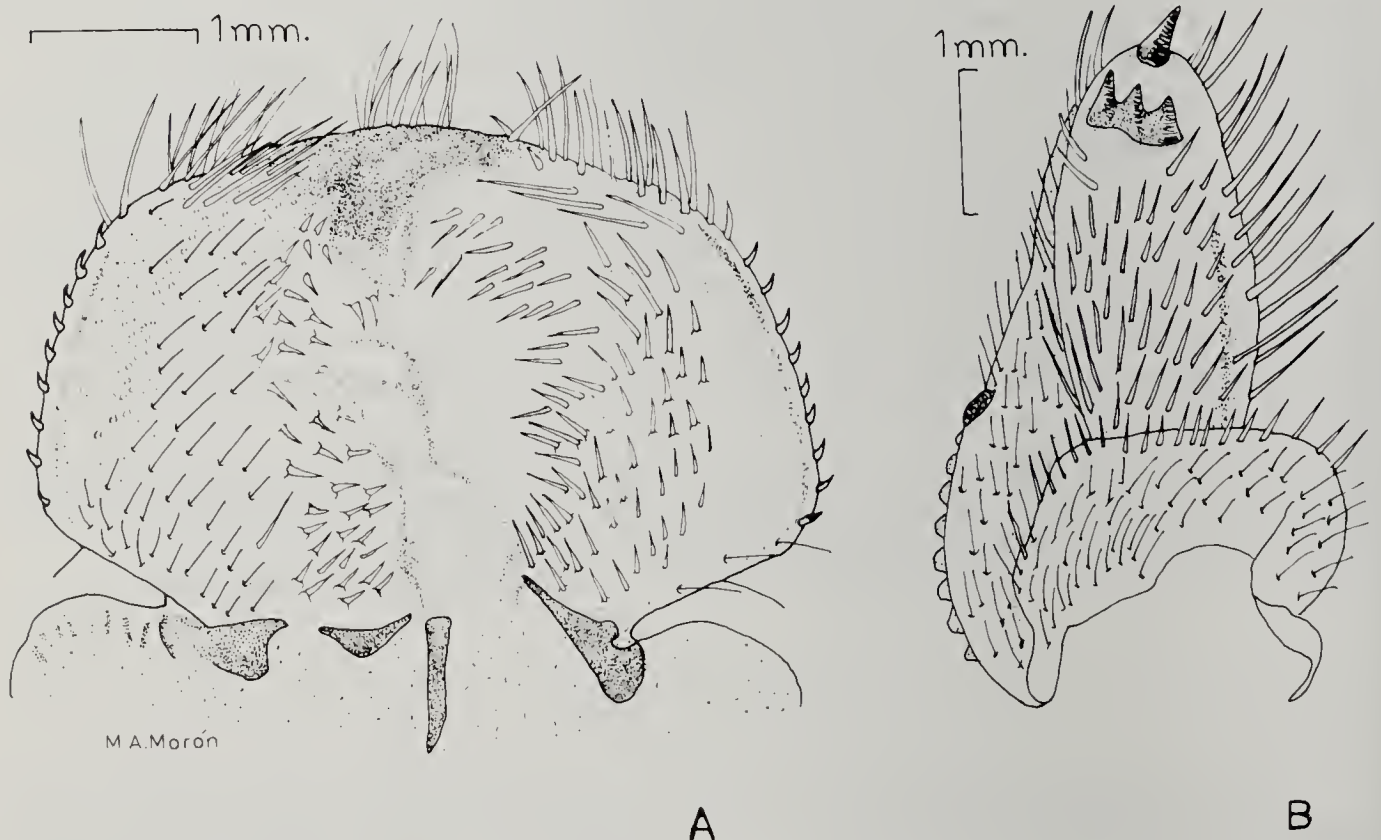


Fig. 1. *Megasoma elephas occidentalis*, third-stage larva. A) Epipharynx. B) Left maxilla, internal view.



*Abdomen.* Dorsa of segments I-VI each with 3-5 transverse rows of short, spine-like setae; dorsa of segments I-II each with 2-3 transverse rows of long, spinelike setae; dorsa of segments III-VI each with transverse row of long, spinelike setae; dorsum of segment VII with 8-9 transverse rows of short, spinelike setae, 1 anterior row of long, fine setae, 1 anteposterior row of long, fine setae, and 1 posterior row of long, fine setae; dorsum of segment VIII with 7-8 transverse rows of short, spinelike setae, some scattered anterior long, fine setae, 1 anteposterior row of long, fine setae, and 1 posterior row of long, fine setae; dorsum of segment IX with anterior scattered, short, spinelike setae, 1 anterior row of long, fine setae, and 1 posterior row of long, fine setae; dorsum of segment X with scattered short, spinelike setae and long, fine setae (pleural lobes of all abdominal segments densely covered with setae). Venter of abdominal segments I-IX each with 1 median transverse row of long fine setae. Raster (fig. 4-A) with 22-27 long, fine setae in campus; teges with 40-44 scattered, long, fine setae; lower anal lip with 78-86 fine setae; upper anal lip with numerous mixed short, spinelike setae and long, fine setae; setae of barbula sparse. Dorsolateral region of segment X (dorsally adjacent to outer extremity of anal slit) with light, cribrate, subtriangular depression (fig. 4-B). Spiracles of segments I-VIII progressively larger (2 to 3 mm long and 1.8 to 2 mm wide). Claws (fig. 4-C) each bearing 2 internal, long, thick basal setae and 2 external, long thick preapical setae.

*Body length.* 90-100 mm (figs. 5-6).

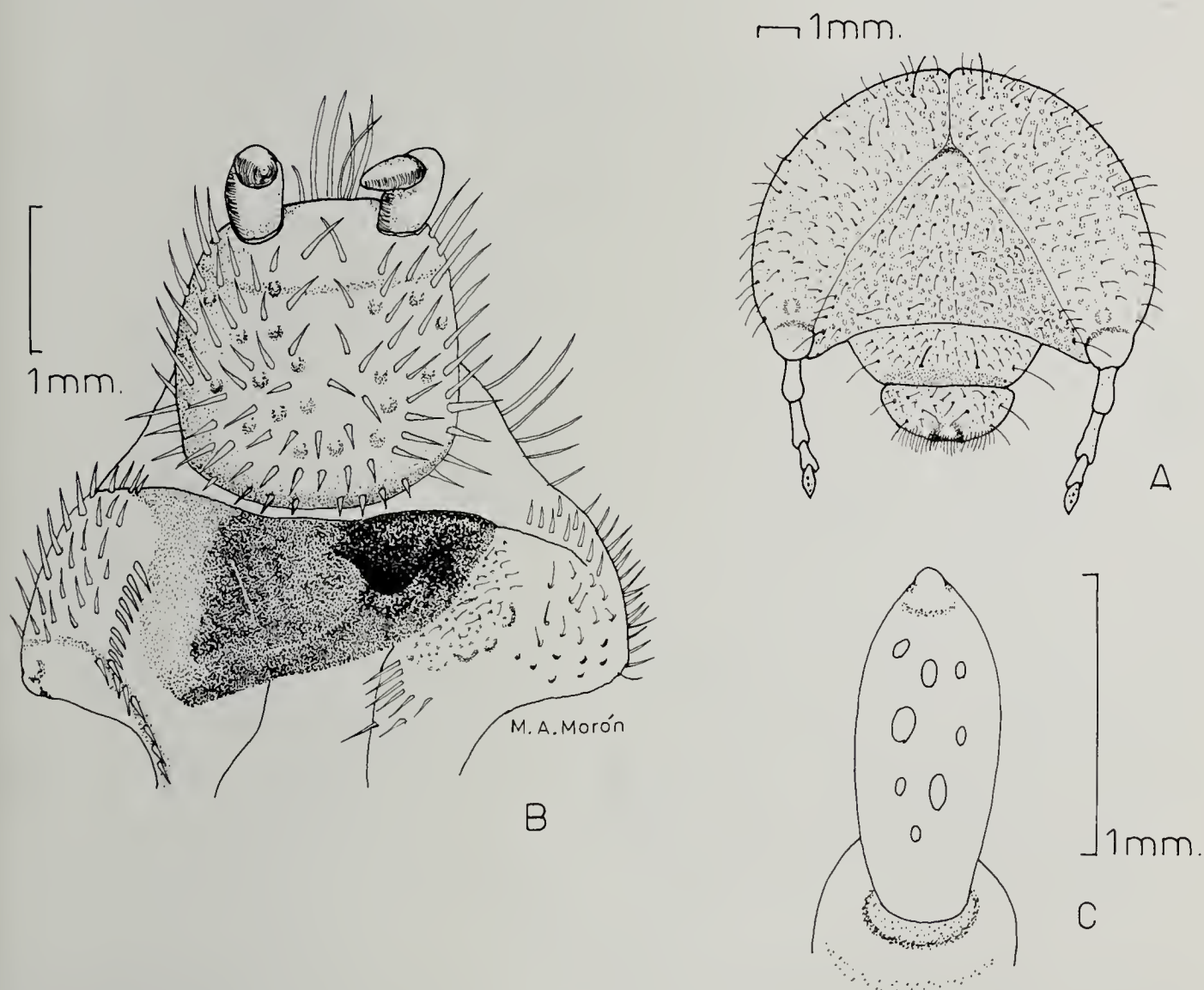


Fig. 2. *Megasoma elephas occidentalis*, third-stage larva. A) Head, frontal view. B) Labium and hypopharyngeal sclerome, internal view. C) Distal segment of antenna, dorsal view.

## DISTRIBUTION

Adults of this subspecies have been collected with electric lights at the following localities. MEXICO. *Colima*: near city of Colima. *Guerrero*: Papanao; Tecpan; Tierra Colorada; Zihuatanejo. *Jalisco*: Barra de Navidad; Chamela; Puerto Vallarta. *Michoacán*: Coahuayana (type-locality); Playa Azul. *Nayarit*: San Blas. *Sinaloa*: Mazatlán. (Bolívar *et al.* 1963; Hardy 1972).

## DISCUSSION

Larvae of *Megasoma elephas occidentalis* are characterized by: 9 spines on acanthoparia; right laterocentral part of anterior border of labrum not sinuous; ocelli vague; anterior abdominal spiracles smaller than posterior spiracles; more than 50 "holes" in respiratory plate; 2-12 rows of setae on abdominal dorsa; setae of barbula sparse; fewer caudal setae; 4 claw setae; and great size and corpulence. These characteristics distinguish larvae of *M. e. occidentalis* from larvae of *Dynastes tityus* and *D. granti*.

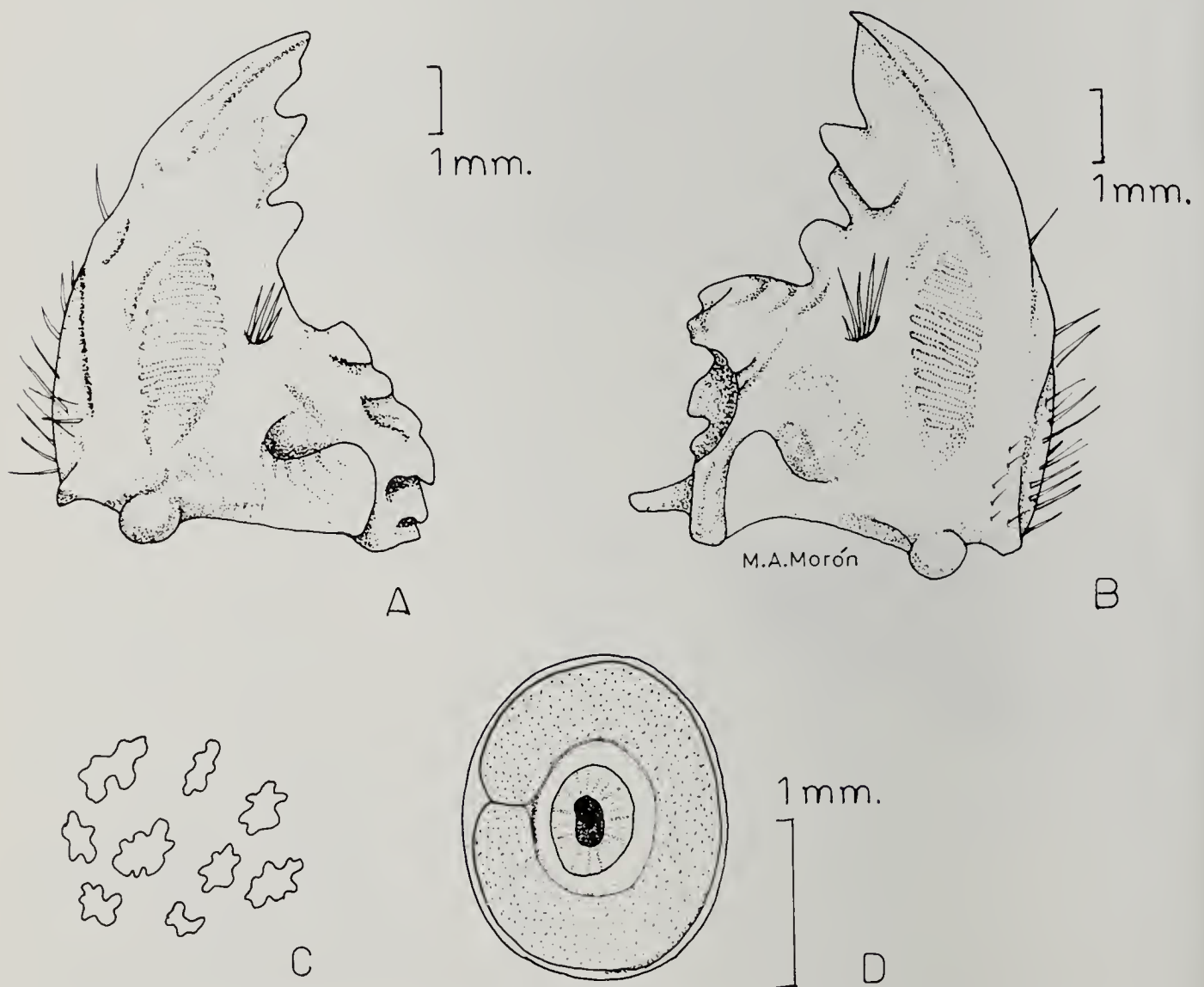


Fig. 3. *Megasoma elephas occidentalis*, third-stage larva. A) Right mandible, ventral view. B) Left mandible, ventral view. C) Structure of respiratory plate of thoracic spiracle (highly magnified). D) Thoracic spiracle.



Characteristics of third-stage larvae of *Strategus* (Dynastinae, Oryctini) and *Megasoma* are compared in Table 1. Larval *Megasoma* differ by: labrum subtrapezoidal; 9 spines on acanthoparia; acia truncate; bulla longitudinal; and lobes of respiratory plate contiguous.

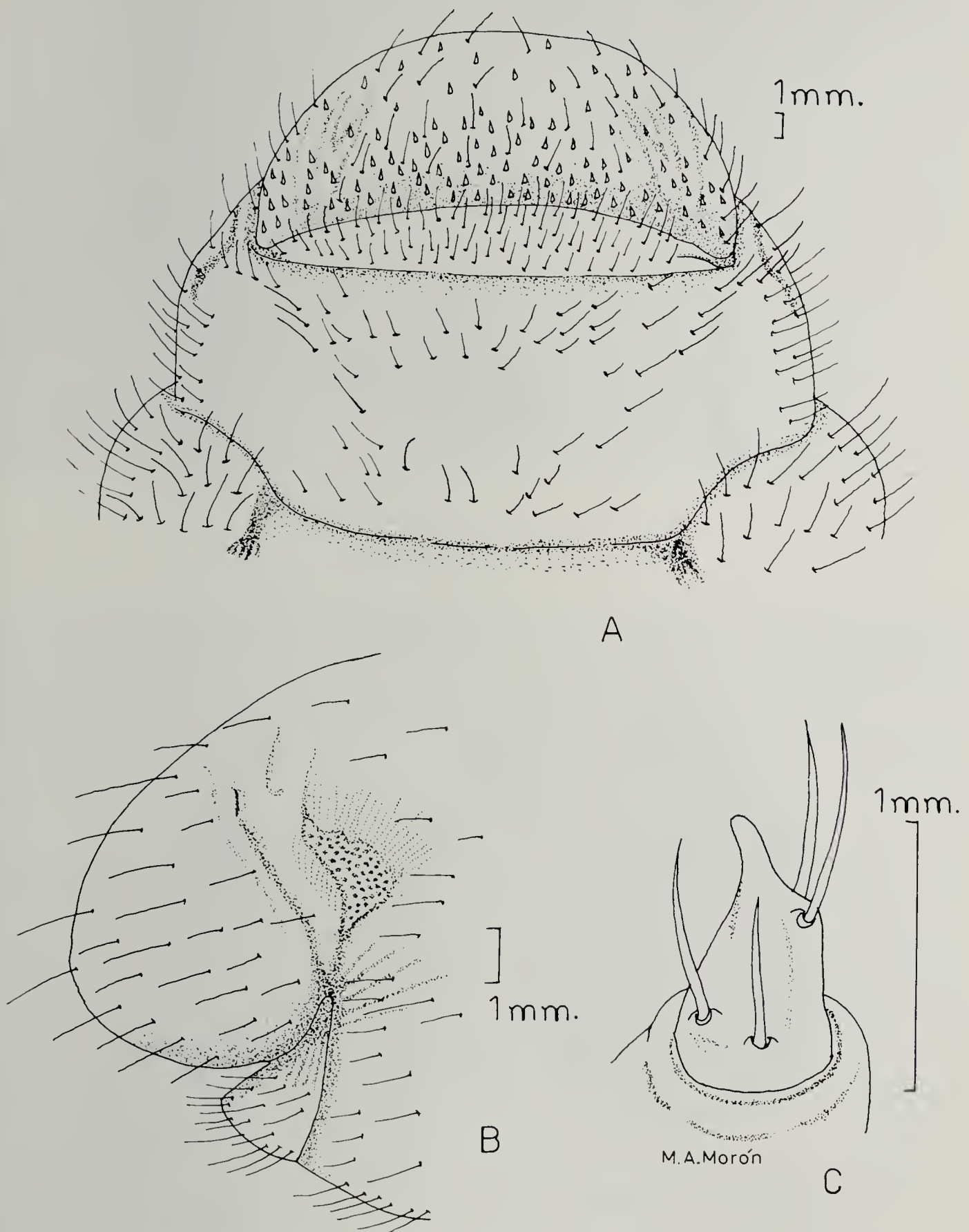


Fig. 4. *Megasoma elephas occidentalis*, third-stage larva. A) Venter of tenth abdominal segment. B) Last abdominal segments, lateral view. C) Claw of left prothoracic leg, side view.

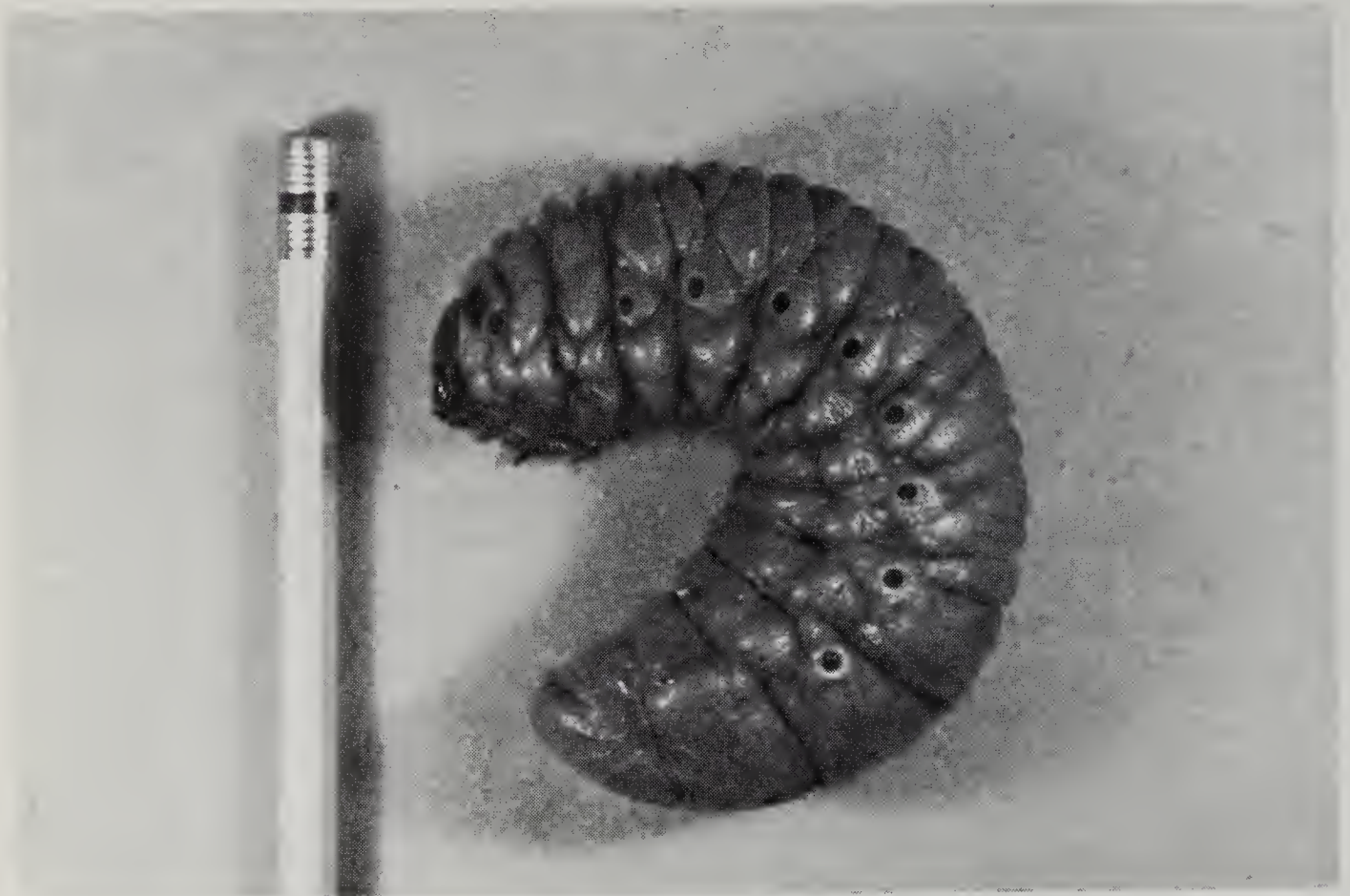


Fig. 5. *Megasoma elephas occidentalis*, third-stage larva, lateral view.

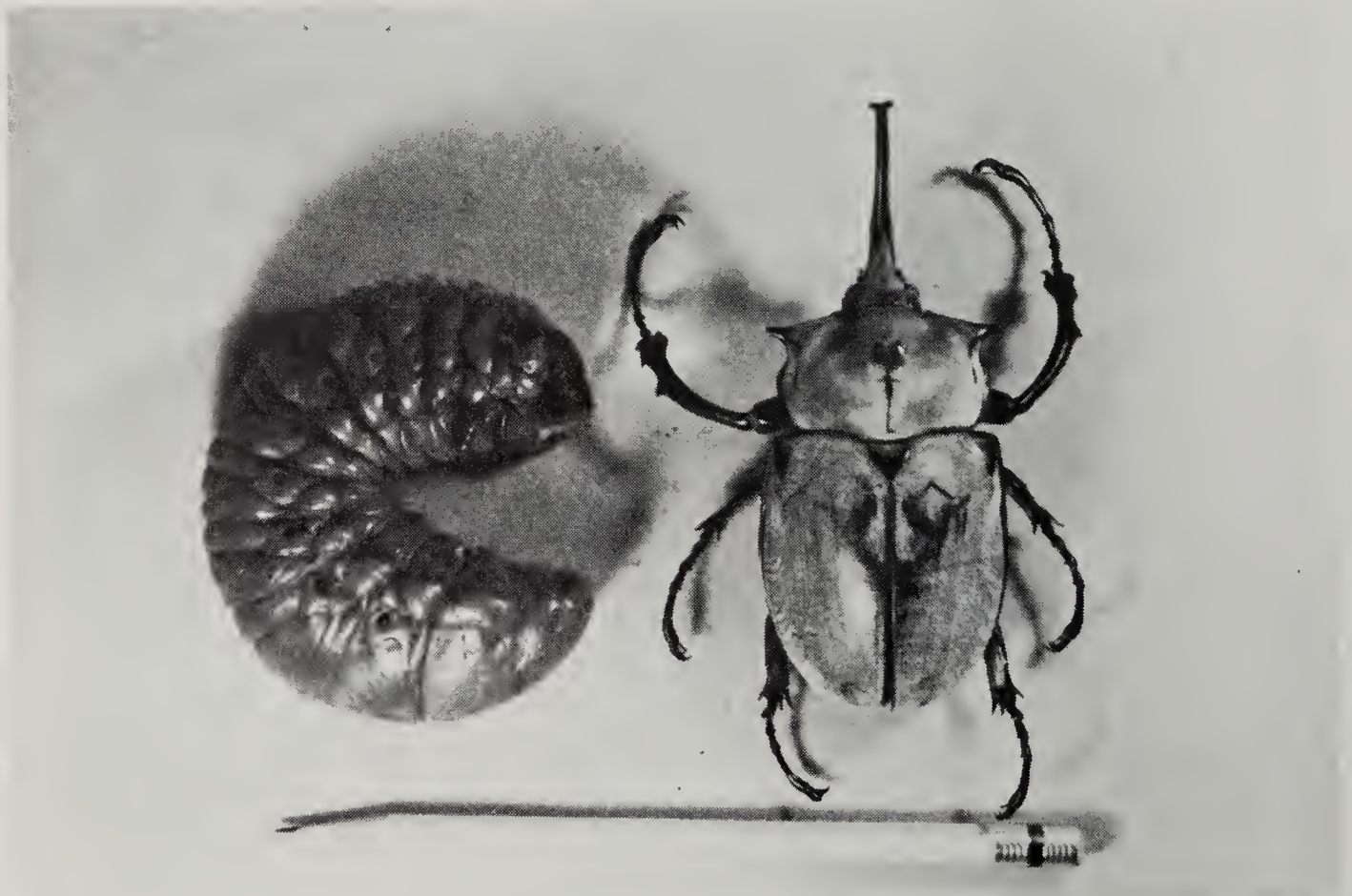


Fig. 6. *Megasoma elephas occidentalis*, third-stage larva, left; major adult male, right.



TABLE 1: Characteristics of third-stage larvae of *Megasoma* and *Strategus*.

Characteristic	<i>Megasoma</i>	<i>Strategus</i>
Number of dorsal sensorial spots on last antennal segment.	8	6-14
Ocelli.	vague	vague
Shape of "holes" of respiratory plate.	irregular	irregular
Number of claw setae.	4	3-4
Labral form.	subtrapezoidal	rounded
Spines on acanthoparia.	9	13-15
Acia.	truncate	acute
Bulla.	longitudinal	transverse
Lobes of respiratory plate.	contiguous	separated

## ACKNOWLEDGMENTS

I wish to thank Miss Yolanda Domínguez and Mrs. Rebeca Peña (Laboratorio de Entomología, Instituto Nacional de Investigaciones Agrícolas, S.A.G. Chapingo, México) for the loan of larval specimens; I also wish to thank Mr. Roberto Johansen (Departamento de Zoología, Instituto de Biología, U.N.A.M. México) for helpful criticism of the manuscript.

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